

The Case for Squad Sharpshooters

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In the most basic sense, having a sharpshooter in a squad is a matter of selecting the best shot and giving him a rifle with a telescopic sight. The sharpshooter would employ an optically enhanced M16/M4, standard ammunition, and the training available within the unit's resources to improve the squad's target engagement capabilities at short and medium ranges. In contrast, snipers use specialized rifles and match-grade ammunition, and are specially selected and trained to provide precision fire at medium and long ranges.

The single squad sharpshooter would engage visible point targets, with a priority of engagement to enemy leaders, personnel with radios, machineguns and rocket launcher crews, and sniper teams. This concept could easily be extended to one sharpshooter per fire team. The sharpshooter would retain the standard rifle M16/M4 but with a day optical scope (DOS). The telescopic sight's ability to improve a shooter's ability to acquire targets will increase the number of targets that can be located and engaged. This inherently improves the scope-equipped sharpshooter's situational awareness.

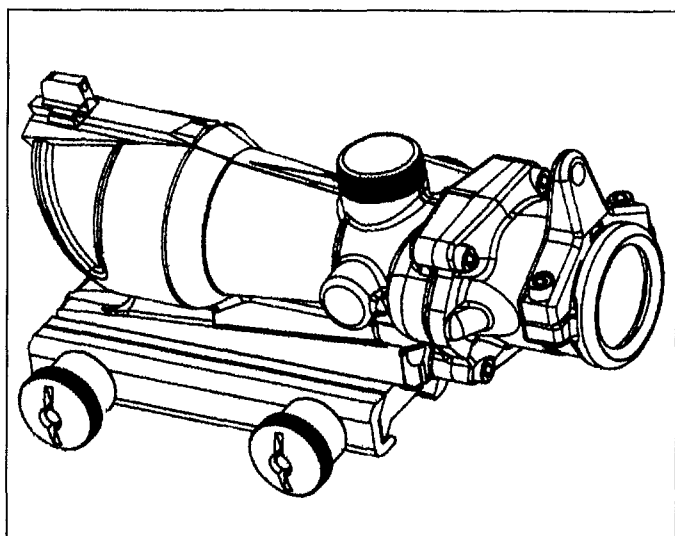
The U.S. Marine Corps Designated Marksman Program is looking at equipping the assistant fire team leaders with scoped M16s. The Rangers have had excellent results providing squad and fire team leaders with the DOS and the rest of the squad with the close combat optics (CCOs). The non-commissioned officers (NCOs), who have had more marksmanship training and experience, can effectively employ this enhanced engagement capability. The enhanced vision sup-

ports their leadership responsibilities by giving them a better look at the enemy and the terrain.

While a rifleman sharpshooter may see targets the leaders cannot, letting the individual soldier make the decision to initiate contact, or *shoot/don't shoot*, may not be appropriate in many situations. DOS-equipped squad and fire team leaders, on the other hand, can make that decision and use tracers to mark precisely where the rest of the element is to concentrate fire. The SEALs, Special Forces, USAF Special Tactics Squadron, Australian SAS, and the Israelis use the DOS as both an enhanced battle rifle and a light sniper rifle, depending on the situation. In some special operations scenarios, every member of the unit is equipped—terrain and enemy permitting—with a day optical scope. One or two DOS-equipped sharpshooters per squad would give the infantry the greatest return on the investment in combat capability.

"We've tried scopes before."

In the past 30 years the infantry has looked at telescopic and reflex sights several times without demonstrating a significant increase in capability. The advanced combat rifle (ACR) program had weapons with optical sights, and after its failure, the idea of equipping the M16 with a telescopic sight was tested. When the optical sight test showed no significant improvement, the Army tested and adopted a reflex collimator sight called the aimpoint close combat optic. A



Day Optical Scope (NSN 1240-01-412-6608, Telescope, Model TAO1M4A1)

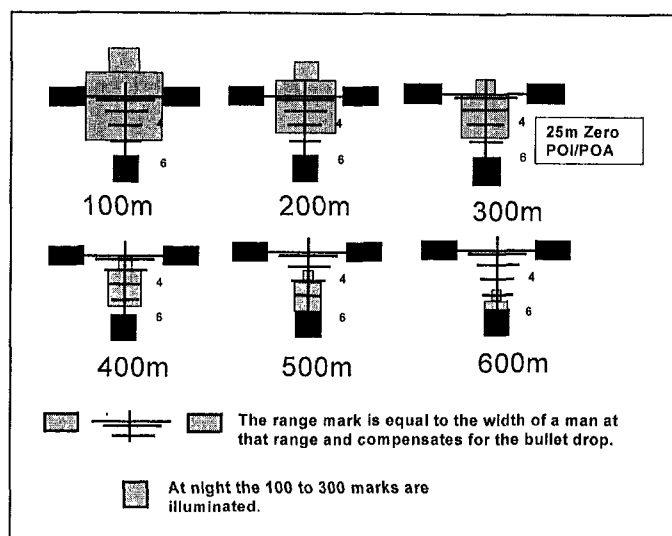
review of these past efforts provides several important insights that relate to the sharpshooter concept.

The SALVO, special purpose individual weapon (SPIW), and advanced combat rifle (ACR) all tried to compensate for individual aiming errors by using a controlled dispersion of multi-projectiles or a burst instead of single well-aimed shots at partially concealed targets. The optical sight test showed no significant increase in hits over iron sights out to 300 meters. The close combat optic showed only a slight increase in average hits, very similar to the reflex sight tests in the 1960s and 1970s.

So why have a sharpshooter with a telescopic sight?

We must remember that these programs were trying to improve the average soldier's marksmanship with an equipment solution (many of the test subjects were not even infantrymen). But there are no gadget solutions to marksmanship training. A marginal shooter with a sniper rifle is still a marginal shooter. If a soldier's position is wobbly and he jerks the trigger, he's lucky if he hits the 50-meter target. In all of these tests, average shooters produced only average scores, while sniper level shooters could hit all the targets with iron sights, and could probably do so even if they were on muskets.

The sharpshooter concept is intended to provide the scoped weapons only to expert marksmen. While the optical sight test showed little improvement out to 300 meters, the data from an early version of the DOS showed significant improvement in hits beyond 300 meters. Once again, the marginal shooters shot poorly, and the excellent shooters hit targets out to 300 meters. Averaging the scores yields average results. For targets beyond 300 meters, and even head shots at 100 meters, the shooter must allow for the bullet's arched trajectory. The DOS has a ballistic compensating reticle that enables the shooter to estimate range and correct for the bullet drop, all in one step. The keys to hitting targets at 300 to 600 meters are a high level of skill in the marksmanship fundamentals and a fast way to compensate for bullet drop. Hits beyond 600 meters require a more accurate rifle, match ammunition, precise range estimation, a highly



Day Optical Scope ranging and bullet drop compensating reticle

developed ability to read and hold off for wind, and precision shooting skills—in other words, a trained sniper.

Both scopes and reflex sights eliminate the errors caused by misaligning the front iron sight in the rear peep. Most shooters who make this error also have problems with steady hold and trigger control. The individual's shooting skill limited these previous tests and masked the system's true potential. The targets in the tests—E-type for the most part—were fully exposed for three to five seconds. The DOS is faster than iron sights in target detection and identification, sight alignment, and range estimation or correction. The tests did not measure any increase in the speed of engagement. A significant tactical advantage can be obtained in combat by forcing an enemy accustomed to making 5-second rushes to make 1.5-second rushes. The close combat optic's major advantage, as shown in testing, was speed in engaging multiple targets (2 to 30) out to about 200 meters. The reflex sights have a major advantage in close quarters battle or in close terrain from 3-50 meters as well as during firing while moving—running, from vehicles or from helicopters—and when engaging moving targets. During the test very few targets were hit at 250 to 300 meters. In all these tests the targets were primarily full E-types, exposed in the open. In combat, the targets would be camouflaged and would often briefly expose only the head and shoulders to fire or crawl forward. The biggest advantage of scopes was not tested or scored: The scope lets you *see* better, not *shoot* better.

The DOS is designed to provide enhanced target identification and hit probability for the M4A1 carbine out to 600 meters. Although it is designed primarily for use during the day, it has a tritium-illuminated reticle for use at night and in low light conditions. The DOS is a lightweight, rugged, fast, and accurate 4-power optical scope. The body is machined from aluminum forgings, and the material and finish are identical to those of the M16/M4. The scope is internally adjustable so that any shock from rough handling can be absorbed by the scope body instead of the adjustment mechanism. For night operations, a night vision adapter can

be added, or the DOS can be removed and a night vision sight attached. Close-range engagement iron sights on top are used for close quarters battle.

Employment of the Squad Sharpshooter

A squad sharpshooter improves a unit's firepower and augments the various ways of harassing and destroying the enemy. The DOS-equipped sharpshooter can support combat operations by overwatching and delivering precise fire on selected targets. This creates casualties among enemy troops, slows enemy movement, frightens enemy soldiers, lowers morale, and adds confusion to their operations. The enhanced vision provided by the 4-power optic helps in locating and identifying targets as well as in collecting and reporting battlefield information.

Even if most of the engagements are expected to be at close range and the squad is primarily equipped with close combat optics, one to three members should be selected as squad sharpshooters and equipped with the DOS. The DOS-equipped soldiers enable a unit to engage point targets at distances beyond the normal effective range (300 meters) of rifles and carbines. Stand-off is always an advantage because it reduces the potential for friendly casualties while inflicting casualties on the enemy and disrupting his movement. Squad sharpshooters can fire in pairs or alternately, or fire and then change positions. They can engage leaders, radio operators, and weapons crews to delay, disrupt, harass, deceive, and confuse the enemy in meeting engagements or suppress threat forces to support maneuver by friendly elements.

The importance of the sharpshooter cannot be measured simply by the number of casualties he inflicts upon the enemy. Realization of his presence instills fear in enemy soldiers and influences their decisions and actions. The role of the squad sharpshooter becomes even more significant when the target is entrenched, positioned among civilians, or part of a civil disturbance. The suppressive firing of weapons in such operations can result in the wounding or killing of non-combatants. During testing and actual combat engagements, DOS-equipped shooters were able to limit fratricide and collateral civilian casualties, and verify targets before firing

under the restrictive rules of engagement.

During urban combat, engagement ranges are often relatively close (50 to 100 meters), but the threat may be well hidden and protected from small arms fire. The DOS-equipped sharpshooter is better able to locate small apertures or loop holes (six to ten inches), acquire the target through the opening, and shoot, or engage small exposed portions of a target. Again the problem is locating the target.

The Tactical Advantage of Range

Historically, most small arms engagements occur at what are considered close to medium ranges. British studies in World War II indicated that 80 percent of *effective* rifle and light machinegun engagements took place at less than 200 yards (183 meters) and 90 percent at less than 300 yards (275 meters). U.S. studies on the M1 Garand in the Korean War showed that 95 percent of all firing was at targets within 300 yards and that troops tended to engage at about 120 yards.

These are relatively close ranges, especially considering that the weapons of World War II and the Korean War fired the much larger and more powerful U.S. .30 caliber 1906, British .303, Russian 7.62X54mmR, Japanese 7.7mm type 92/99, or German 7.9X57mm cartridges. The iron sights on these weapons were graduated up to 2000 meters or more, and the doctrine and training of the period supported long-range rifle fire. The power of the weapon, doctrine, and training does not dictate actual engagement ranges.

A more recent study, the results of which are depicted here, shows the types of engagements and ranges expected in open desert terrain. The key is to understand that both sides in these historical engagements used the unaided eye and iron sights to acquire and hit targets. An understanding of the factors that limit effective engagement ranges helps the infantry equip, plan, and train to maximize battlefield capabilities.

The factors that have always limited engagement ranges in combat have been the limitations of the human eye, the use of iron sights, and the level of training the soldiers have received. The unaided eye can locate and identify exposed human targets out to about 300 meters. Human targets wearing camouflage, maintaining a low profile, and using cover and concealment are difficult to detect even at close range. Light conditions and the problems associated with focusing through iron sights may not allow a soldier to see the target and aim at it simultaneously. The small long-range iron sight aperture decreases the light that reaches the shooter's eye; a target barely visible to the naked eye fades away when he tries to aim at it. Concerns about fratricide may prevent the soldier from engaging targets that he cannot clearly identify. The coatings on the lenses of reflex sights and close combat optics also decrease the light to the eye. The DOS is a 4X32mm optical sight. The 4X means that objects appear four times closer or larger, which means a soldier can see four times as much detail. Dividing the size of the objective



Sharpshooters provide a trained base to draw on for sniper training.

lens (32mm) by the magnification 4X gives an exit pupil diameter of 8. Exit pupil diameters of 5 or more gather light and aid in low-light vision, which is why binoculars come in 7X35mm, 8X40mm, and 10X50mm. Soldiers equipped with the DOS can see four times better than soldiers equipped with iron sights or reflex sights. They are significantly better able to locate and identify targets.

The trajectory of modern small arms ammunition requires very little correction when using a battle sight zero of 250-300 meters. Qualification records show that most soldiers hit very few of the 300-meter targets, either missing them or failing to engage them at all. (A shooter who fails to engage is usually allowed to alibi, and then fires any leftover ammunition at the 50 targets.) Changing the full E-type silhouettes used on qualification to the prone F-type would provide a more realistic course of fire and illustrate that the effective range, for most shooters with iron sights, is about 200 meters, as concluded by the combat studies. Human eyesight, iron sights, bullet trajectory, and the existing level of training are factors that make 200 to 300 meters the maximum practical range for most small arms engagements. However, an M16A2 or M4 zeroed for 300 meters is shooting 6 to 8 inches high at mid ranges (100 to 200 meters). Aiming at the center of an exposed head or firing port at 100 meters will produce a miss. The iron sights have a mechanically set bullet drop for ranges beyond 300 meters, but this does not improve a soldier's ability to estimate range before cranking in the adjustment.

In earlier history, soldiers could not see the sights or the enemy at night. They could only point and fire in the direction of muzzle flashes, a technique that is rarely successful beyond 25 to 50 meters. Battlefield illumination in the form of flares was used to enhance the effectiveness of weapons. Night vision and thermal sights, when present in sufficient quantities, can significantly alter the equation. The weight, bulk, and expense of these sights, however, have limited the percentage of troops able to bring them to the fight. An enemy who is deficient in night vision equipment can counter much of our advantage by conducting illuminated night operations. The DOS's tritium-illuminated reticle can engage muzzle flashes in total darkness, and its light-gathering capability can extend effectiveness under any available illumination, from flares to starlight reflecting off snow.

The Rangers have found that, in a supported position, it is possible to fire the DOS accurately while wearing a head-mounted AN/PVS-14 pocket scope. Night vision goggles and the active PAQ-4/PEQ-2 IR aiming lasers offer many advantages if the enemy does not have significant amounts of night vision equipment. The M4's Picatinny rail allows

RANGE IN METERS		TARGET TYPE	
0-100m	30-40%	Point	20-25%
0-200m	65-75%	Groups, sources of fire or danger	55-60%
0-300m	75-85%	Other (buildings, vehicles)	20-25%
0-400m	85-95%		
FIRING POSITIONS		LIGHT CONDITIONS	
Prone w/wo cover or support	25-30%	Day	50%
Standing stationary position	25-30%	Night	30%
Running, walking	40-45%	Dawn/Dusk	20%
Moving vehicles	5-10%		
		FIRING MODES	
		Aimed Semi-automatic	20-25%
		Aimed full-auto	20-25%
		Off-hand/point shooting	50-60%

Percentages of engagements that occur under stated conditions.

the dismounting and remounting of the DOS and new mini night vision sight AN/PVS-17 MNVS or PVS-4 while retaining zero.

The 5.56mm M855 fired from the M4/M4A1 carbine is capable of penetrating fabric body armor and steel helmets out to 600 meters and inflicting casualties out to about 800 meters, which is well beyond normal engagement ranges. The limiting factor at the longer ranges is the ammunition's accuracy, not its power. When fired from the M4A1 Carbine, the M855 ammunition will group within a respectable 10 to 17 inches at 600 meters. Since the average man is 19 inches wide, a well-aimed shot can be lethal at this range.

The DOS is intended to increase the soldier's ability to detect and identify targets, and detecting and identifying targets can improve his ability to observe and acquire information. As the operational squad performs the secondary mission of collecting and reporting battlefield intelligence, the commander can act, instead of reacting, on the basis of accurate accounting and description of the opposing force's strength, equipment, and location. When the sharpshooter sees or suspects a target, he uses the DOS for a detailed view of the target area. (The scope should not be used to search the area, because its narrow field of view compares to the eye alone, and its magnification can cause eye fatigue.) A soldier must always be aware of his surroundings and take nothing for granted. He must cue on a hint of movement, a flash, a puff of smoke, or a vague feeling that something doesn't look right.

In the attack, machineguns and squad automatic weapons provide suppressive fire to fix the enemy and degrade the effectiveness of his fire, allowing friendly forces to maneuver to a position from which they can put decisive fire onto the enemy. Suppression must occur over the required time. Suppression cannot be achieved by massed fire in the general direction of the enemy, because this requires unsupportable amounts of ammunition. Supporting sharpshooters, on the other hand, can maintain a high volume of precision fire on firing apertures and detect smoke flashes from machineguns

or rocket-propelled grenades, or even individual rifles. Instead of just firing at the objective and adding their fire to the rain of machinegun bullets, they can locate and engage point targets not apparent to the shooters with iron sights or the close combat optic. Hitting every enemy soldier who exposes himself to fire is far more suppressive than a few more bullets coming in his general direction. Attacking troops may be forced to begin an assault from as much as 400 meters out, which could require a lot of machinegun and mortar ammunition, especially with light infantry. Precision suppression from a platoon's three to six sharpshooters would allow the machineguns to conserve ammunition and increase their fire during the critical last 100 meters. As the attacking element closes on the enemy position, mortars, machineguns, grenade launchers, and riflemen of the fire support element must shift or cease firing to prevent fratricide. The sharpshooters' enhanced ability to identify and hit targets, however, would allow them to continue to fire in support of the assault.

Sharpshooters and U.S. Snipers

The sharpshooter concept supports and complements the sniper concept; it does not compete with snipers or in any way replace them. Sharpshooters basically use the issued infantry rifle and ammunition while snipers use a more powerful and accurate long-range weapon. Snipers require special selection and training; sharpshooters require only high proficiency in the fundamental marksmanship techniques. Snipers can make head shots at 600 meters and body shots at 800 to 1200 meters. Snipers are at their greatest tactical advantage when they engage targets from beyond 500 meters. Sharpshooters should routinely be able to make head shots at 200 meters, hit F-type targets at 300 meters, and hit E-type targets at 500 meters.

Squad sharpshooters offer a base from which to later draw candidates for training as company or battalion snipers. Sharpshooters share some high-priority targets with snipers, focusing on leaders, radio operators, other snipers, or heavy weapons crews. They don't have the range or power to address stand-off materiel targets such as radars or missiles. The infantry's employment of snipers, which is still evolving, has considered the sniper another supporting weapon that moves with the formation and is called upon as a situation presents itself, much as leaders would call to bring up the machinegun, rocket launcher, flame thrower, or engineer support.

Combat studies have shown that in this role snipers make a significant contribution only during the initial maneuvering in a meeting engagement or assault. Their contribution in the defense is the highest during lulls—engaging enemy patrols, harassing enemy observation posts and forces maneuvering at long range. During the assault phase of the attack or defense, bolt-action rifles and high-power optics have limited their contribution—thus leading to the sniper's on-again, off-again status with the infantry. Special Operations units and the Marine Corps tend to employ snipers more independently. Accompanying elements are often there to support sending the sniper mission. Snipers are sent out to

hunt appropriate targets where the stalk and the hide are as important as marksmanship skills. The sharpshooter is more compatible with the traditional infantry supporting role and is neither trained nor equipped for independent employment.

The snipers focus on the precision medium- and long-range engagement of priority targets and are usually employed at 3 to 9 per battalion for a one-shot, one kill. The sharpshooter concept would create 27 to 81 sharpshooters per battalion and provide a larger volume of precision short-range and enhanced medium-range fire against targets of opportunity. Snipers hunt priority targets, while sharpshooters can also engage these same priority targets, as they see the opportunity while maneuvering and firing as part of the squad.

There is some question whether 3 to 9 snipers per battalion can produce tactically significant results. Just increasing the number of snipers probably cannot be supported with the additional highly specialized selection, training, equipment, and sustainment requirements. But the addition of 27 to 81 sharpshooters would be a powerful combat multiplier and have a significant effect. This concept would be sustainable because it uses the standard weapon and ammunition and the expert level marksman created in the course of normal rifle marksmanship training.

Sharpshooters against Enemy Snipers

Field Manual (FM) 90-10-1, *An Infantryman's Guide to Combat In Built-Up Areas*, Appendix J, gives an excellent definition of enemy sniper threat levels. The classification of sniper threats is based on the soldier's skill level as a shooter/stalker and the range and accuracy of the system with which he is equipped, including weapon, ammunition, and optics.

An enemy *expert professional sniper* is specially selected and trained; he is equipped with an extremely accurate scope-mounted sniper rifle; and he engages targets from beyond effective small arms ranges (300 to 1500 meters). Against this threat, a squad sharpshooter would be clearly overmatched. The best answer to this threat is another sniper who is better trained, better equipped—with a flatter-shooting, more accurate rifle and better target acquisition and fire control equipment. The professional sniper can also be overmatched with direct-fire systems, such as the Bradley or the M1A1 tank with its thermal imager and precision 120mm gun, both of which are invulnerable to sniper fire. But even professional snipers are vulnerable in situations where they have lost the initiative. The squad sharpshooter can be effective against professional snipers, ambushing them as they move into or flee positions, and during chance contacts at ranges of less than 200 meters, where the high-power optics, slow rate of fire, and small size of the team even put the professional sniper at a disadvantage.

The next level of enemy shooter, the *trained marksman*, is an infantryman who is an above average marksman with good fieldcraft and usually equipped with the standard rifle, or possibly an enhanced rifle such as the 7.62X54R SVD. Trained marksmen are employed singly or in pairs to create confusion, inflict casualties, harass, and disrupt operations.

They are an economy of force asset employed with flank or rear guards or covering forces. In the defense, they can be employed on the perimeter or with outposts to provide warning and disrupt approaching soldiers by forcing them to deploy early, hitting them in attack positions, protecting obstacles. In stalemate or siege conditions, they focus on inflicting casualties, limiting movement, lowering morale, and supporting both reconnaissance and counterreconnaissance efforts. They engage the same priority personnel targets a sniper engages. They are employed with supporting weapons such as machineguns to increase the effectiveness of suppressive fire. In the attack, they attempt to eliminate priority targets in centers of resistance, holding up movement to a position where a close assault can be launched. Unlike a sniper rifle, the trained marksman's weapon has not been so specialized as to put him at a disadvantage in close combat. This is similar to the concept of the sharpshooter. Sniping by these marksmen is something that has evolved as an ad hoc arrangement during recent conflicts such as Grozny, and a trained American squad sharpshooter should be able to deal effectively with them as well.

The squad sharpshooter concept, therefore, is an attempt to exploit the lessons learned and formalize the concept in doctrine, training, organization, and equipment. A U.S. sharpshooter would be at the top of this class in quantity and quality. Combined with our snipers, squad sharpshooters could largely neutralize the threat of enemy marksmen and be a force multiplier in all dismounted operations.

The lowest level of enemy sniping is carried out by *civilian irregular snipers*. Although these snipers usually lack formal training, they may have years of experience in the long-smoldering conflicts around the world. They may use a standard rifle or even a scope-sighted hunting rifle. They usually engage targets of opportunity and are loosely coordinated with enemy combat operations. They often do not wear uniforms or carry their weapons openly, which makes them difficult to distinguish from the civilian population. This threat has confronted the infantry and cost us casualties from Vietnam to Somalia. A U.S. squad sharpshooter would have a overmatching capability against civilian irregular snipers in terms of both training and equipment.

A well-trained soldier who can fully exploit the inherent accuracy of his M16A2 rifle or M4 carbine and DOS, would be a versatile supporting asset to the commander. The squad sharpshooter could be implemented quickly, cheaply, and in numbers that would offer a significant tactical advantage. And such an advantage can pay dividends in terms of lives saved and battles won in the next conflict.

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